



SEQUENCE LISTING

<110> KAZUSA DNA RESEARCH INSTITUTE FOUNDATION; Institute for Biomedical Research and Innovation
Hisashi Koga et al.

<120> NOVEL PLEXIN POLYPEPTIDE, DNA ENCODING THE SAME AND USE THEREOF

<130> 4600-0119PUS1

<140> US 10/573,262

<141> 2006-03-23

<150> JP 2003-371040

<151> 2003-10-30

<150> JP 2004-229871

<151> 2004-08-05

<160> 24

<170> PatentIn version 3.1

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Ser Leu Asp Ala Arg Gly Asp Leu Ala Lys Leu Phe Thr Phe Asp Leu
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Asn Pro Ser Asp Asp Asn Ile Leu Lys Ile Lys Gln Gly Ala Lys Glu
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Gln His Lys Leu Gly Phe Val Arg Ala Phe Leu His Pro Ala Val Pro
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Pro His Ser Ala Gln Pro Tyr Ala Tyr Leu Ala Leu Asn Ser Glu Ala
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Arg Ala Gly Asp Lys Asp Ser Gln Ala Arg Ser Leu Leu Ala Arg Ile
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Cys Leu Pro Arg Gly Ala Gly Gly Asp Ala Lys Lys Leu Thr Glu Ser
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Tyr Ile Gln Leu Gly Leu Gln Cys Ala Gly Gly Ala Gly Arg Gly Asp
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Leu Tyr Ser Arg Leu Val Ser Val Phe Pro Ala Arg Glu Gln Phe Phe
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Ala Ala Leu Cys Ala Phe Arg Phe Asp Asp Val Gln Ala Ala Ile Arg
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Ala Ala Arg Thr Ala Cys Phe Val Glu Pro Ala Pro Asp Val Val Ala
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Val Leu Asp Ser Val Val Gln Gly Thr Gly Pro Ala Cys Glu Ser Lys
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Arg Asn Ile Gln Leu Gln Pro Glu Gln Leu Asp Cys Gly Ala Ala His
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Leu Gln His Pro Leu Thr Ile Leu Gln Pro Leu Arg Ala Ser Pro Val
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Phe Arg Ala Pro Gly Leu Thr Ala Val Ala Val Ala Ser Ala Asn Asn
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Tyr Thr Ala Val Phe Leu Gly Thr Ala Thr Gly Arg Leu Leu Lys Ile
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Ser Leu Asn Glu Ser Met Gln Val Val Ser Arg Arg Val Leu Thr Val
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Pro Gly Tyr Leu Tyr Leu Met Thr Ser His Gln Met Ala Arg Val Lys
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Gln Gln Asp Cys Thr Asn Ser Ser Gln Pro His Phe Trp Thr Ser Ala
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Ile Asp Val His Arg Asp Tyr Thr Gly Met Ile Leu Gln Ile Ser Gly
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Gly Val Arg Thr Val Ala Arg Val Pro Gly Pro Ala Tyr Asp His Gln
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Ile Ala Tyr Cys Asn Leu Leu Pro Arg Ala Gln Phe Pro Ser Phe Pro
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Ala Gly Gln Asp His Val Thr Val Glu Met Ser Val Arg Val Lys Gly
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His Asn Ile Val Ser Ala Asn Phe Thr Ile Tyr Asp Cys Ser Arg Ile
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Gly Gln Val Tyr Pro His Thr Ala Cys Thr Ser Cys Leu Ser Thr Gln
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Ser Met Leu Gln Val Leu Val Asn Asp Thr Asp Pro Cys Thr Asp Leu
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Thr Arg Thr Ala Thr Ser Ile Thr Cys Thr Val Pro Gly Gly Thr Leu
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Pro Ser Pro Val Pro Val Cys Val Arg Phe Glu Ser Arg Gly Cys Val
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His Gly Asn Leu Thr Phe Trp Tyr Met Gln Asn Pro Val Ile Thr Ala
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Ile Ser Pro Gly Arg Ser Pro Val Ser Gly Gly Arg Thr Ile Thr Val
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Ala Gly Glu Arg Phe His Met Val Gln Asn Val Ser Met Ala Val His
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His Ile Gly Arg Glu Pro Thr Phe Cys Lys Val Leu Asn Ser Thr Leu
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Ile Thr Cys Pro Ser Pro Gly Ala Leu Ser Asn Ala Ser Ala Pro Val
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<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide reverse primer

<400> 4
 ccacctgttc aaacttgtgc tg 22

<210> 5
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide reverse primer (GSP1)

<400> 5
 aatcttgatg tggactcat ggccttc 27

<210> 6
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide forward

primer

<400> 6
aagctgctgg ggcggggaga tgggct 26

<210> 7
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide reverse primer (GSP2)

<400> 7
aatgttgtgt cctttgaccc ttac 24

<210> 8
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide forward primer

<400> 8
ttgtcgacac aagttttgtac aaataagccag gctctatggg ctgtgggcgt ggtctccacg 60
gagccgcccc cgggctgagc 80

<210> 9
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide reverse primer

<400> 9
aaatgtggct ggctggagtt ggt 23

<210> 10
<211> 753
<212> DNA
<213> mouse

<400> 10
gagatgggct gtgggcgtgg tctccacgga gccgccccc ggctgagcgc ctccgcagag 60
tcgggccggg gcgcgggggc cggggggcgc aggcgcgggc aggaagcgcc tcgcggcccc 120

ggcccgcccc ccgcctctcg ccgcctccga gctcccggct cccggccgcg ccgcgcccc 180
 tgcactcgcc gcgcgcgcga gcgcgcgcgc gcctggatgg ctgcgcgcgc cgcgggcggc 240
 gcaccccccta gcgcgcgggc cgcgcgcgcgc gtccccttgc gtccgcgcgc tcaactgcgc 300
 ggccctgggc tgctgcgcgc gcctctgcgc ctgcctgcgc gggcggcacg ggccggcgcc 360
 ctagagatcc agcgcgcgtt cccctgcgcgc acgcccacca acaacttcgc cctggacggc 420
 acggcgggca ccgtgtactt ggcgggcagtg aaccgcctgt accaactgtc gagtgccaac 480
 ttgagcctgg aagccgaggc gacccgtgggt cccgtgccgg acagcccgcct gtgtcacgcc 540
 ccgcagctcc cgcaggcctc gtgcgcgcgc ccgcggcgcc tcacggacaa ctacaacaaa 600
 atcctgcagt tggacccggg ccaggglctg gtggctgcgc gcggctccat ctaccagggt 660
 ctgtgccagc tgaggcgcgc ggcgaacatc tcagccctgg ccgtgagctt tccgcctgcc 720
 gcgcgcaccg cagaaccggt caccgtgttc ccc 753

<210> 11
 <211> 251
 <212> PRT
 <213> mouse

<400> 11

Glu Met Gly Cys Gly Arg Gly Leu His Gly Ala Ala Pro Gly Leu Ser
 1 5 10 15

Ala Ser Pro Glu Ser Gly Arg Gly Ala Gly Ala Gly Gly Gly Arg Arg
 20 25 30

Gly Gln Glu Ala Pro Arg Gly Pro Gly Pro Pro Pro Ala Ser Arg Arg
 35 40 45

Leu Arg Ala Pro Gly Ser Arg Pro Arg Arg Ala Pro Cys Thr Arg Arg
 50 55 60

Ala Ala Gln Pro Ala Leu Ala Trp Met Ala Arg Arg Ala Ala Gly Gly
 65 70 75 80

Ala Pro Pro Ser Ala Arg Ala Ala Ala Val Pro Leu Arg Pro Arg
 85 90 95

Pro His Ser Arg Gly Pro Gly Leu Leu Pro Leu Pro Leu Leu Leu Leu
 100 105 110

Leu Gly Ala Ala Arg Ala Gly Ala Leu Glu Ile Gln Arg Arg Phe Pro
 115 120 125

Ser Pro Thr Pro Thr Asn Asn Phe Ala Leu Asp Gly Thr Ala Gly Thr
 130 135 140

Val Tyr Leu Ala Ala Val Asn Arg Leu Tyr Gln Leu Ser Ser Ala Asn
 145 150 155 160

Leu Ser Leu Glu Ala Glu Ala Thr Val Gly Pro Val Pro Asp Ser Pro
 165 170 175

Leu Cys His Ala Pro Gln Leu Pro Gln Ala Ser Cys Glu His Pro Arg
 180 185 190

Arg Leu Thr Asp Asn Tyr Asn Lys Ile Leu Gln Leu Asp Pro Gly Gln
 195 200 205

Gly Leu Val Val Ala Cys Gly Ser Ile Tyr Gln Gly Leu Cys Gln Leu
 210 215 220

Arg Arg Arg Gly Asn Ile Ser Ala Leu Ala Val Ser Phe Pro Pro Ala
 225 230 235 240

Ala Pro Thr Ala Glu Pro Val Thr Val Phe Pro
 245 250

<210> 12
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide forward primer

<400> 12
 caccatgggc tgtgggcgtg gtct 24

<210> 13
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide reverse

primer 1

<400> 13
tcaggcctcg ctgtaacact cataga 26

<210> 14
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide reverse primer 2

<400> 14
ggcctcgctg taacactcat aga 23

<210> 15
<211> 1997
<212> PRT
<213> mouse

<400> 15

Glu Met Gly Cys Gly Arg Gly Leu His Gly Ala Ala Pro Gly Leu Ser
1 5 10 15

Ala Ser Pro Glu Ser Gly Arg Gly Ala Gly Ala Gly Gly Gly Arg Arg
20 25 30

Gly Gln Glu Ala Pro Arg Gly Pro Gly Pro Pro Pro Ala Ser Arg Arg
35 40 45

Leu Arg Ala Pro Gly Ser Arg Pro Arg Arg Ala Pro Cys Thr Arg Arg
50 55 60

Ala Ala Gln Pro Ala Leu Ala Trp Met Ala Arg Arg Ala Ala Gly Gly
65 70 75 80

Ala Pro Pro Ser Ala Arg Ala Ala Ala Val Pro Leu Arg Pro Arg
85 90 95

Pro His Ser Arg Gly Pro Gly Leu Leu Pro Leu Pro Leu Leu Leu Leu
100 105 110

Leu Gly Ala Ala Arg Ala Gly Ala Leu Glu Ile Gln Arg Arg Phe Pro
115 120 125

Ser Pro Thr Pro Thr Asn Asn Phe Ala Leu Asp Gly Thr Ala Gly Thr
 130 135 140

Val Tyr Leu Ala Ala Val Asn Arg Leu Tyr Gln Leu Ser Ser Ala Asn
 145 150 155 160

Leu Ser Leu Glu Ala Glu Ala Thr Val Gly Pro Val Pro Asp Ser Pro
 165 170 175

Leu Cys His Ala Pro Gln Leu Pro Gln Ala Ser Cys Glu His Pro Arg
 180 185 190

Arg Leu Thr Asp Asn Tyr Asn Lys Ile Leu Gln Leu Asp Pro Gly Gln
 195 200 205

Gly Leu Val Val Ala Cys Gly Ser Ile Tyr Gln Gly Leu Cys Gln Leu
 210 215 220

Arg Arg Arg Gly Asn Ile Ser Ala Leu Ala Val Ser Phe Pro Pro Ala
 225 230 235 240

Ala Pro Thr Ala Glu Pro Val Thr Val Phe Pro Ser Met Leu Asn Val
 245 250 255

Ala Ala Asn His Pro Asn Ala Ser Thr Val Gly Leu Val Leu Pro Pro
 260 265 270

Thr Ser Gly Thr Gly Gly Ser Arg Leu Leu Val Gly Ala Thr Tyr Thr
 275 280 285

Gly Phe Gly Ser Ala Phe Phe Pro Arg Asn Arg Ser Leu Glu Asp His
 290 295 300

Arg Phe Glu Asn Thr Pro Gln Ile Ala Ile Arg Ser Leu Asp Ala Arg
 305 310 315 320

Gly Asp Leu Ala Lys Leu Phe Thr Phe Asp Leu Asn Pro Ser Asp Asp
 325 330 335

Asn Ile Leu Lys Ile Lys Gln Gly Ala Lys Glu Gln His Lys Leu Gly
 340 345 350

Phe Val Arg Ala Phe Leu His Pro Ala Val Pro Pro His Ser Ala Gln
 355 360 365

Pro Tyr Ala Tyr Leu Ala Leu Asn Ser Glu Ala Arg Ala Gly Asp Lys
 370 375 380

Asp Ser Gln Ala Arg Ser Leu Leu Ala Arg Ile Cys Leu Pro Arg Gly
 385 390 395 400

Ala Gly Gly Asp Ala Lys Lys Leu Thr Glu Ser Tyr Ile Gln Leu Gly
 405 410 415

Leu Gln Cys Ala Gly Gly Ala Gly Arg Gly Asp Leu Tyr Ser Arg Leu
 420 425 430

Val Ser Val Phe Pro Ala Arg Glu Gln Phe Phe Ala Val Phe Glu Arg
 435 440 445

Pro Gln Gly Ala Pro Gly Ala Arg Asn Ala Pro Ala Ala Leu Cys Ala
 450 455 460

Phe Arg Phe Asp Asp Val Gln Ala Ala Ile Arg Ala Ala Arg Thr Ala
 465 470 475 480

Cys Phe Val Glu Pro Ala Pro Asp Val Val Ala Val Leu Asp Ser Val
 485 490 495

Val Gln Gly Thr Gly Pro Ala Cys Glu Ser Lys Arg Asn Ile Gln Leu
 500 505 510

Gln Pro Glu Gln Leu Asp Cys Gly Ala Ala His Leu Gln His Pro Leu
 515 520 525

Thr Ile Leu Gln Pro Leu Arg Ala Ser Pro Val Phe Arg Ala Pro Gly
 530 535 540

Leu Thr Ala Val Ala Val Ala Ser Ala Asn Asn Tyr Thr Ala Val Phe
 545 550 555 560

Leu Gly Thr Ala Thr Gly Arg Leu Leu Lys Ile Ser Leu Asn Glu Ser
 565 570 575

Met Gln Val Val Ser Arg Arg Val Leu Thr Val Ala Tyr Gly Glu Pro

580					585					590					
Val	His	His	Val	Met	Gln	Phe	Asp	Pro	Met	Asp	Pro	Gly	Tyr	Leu	Tyr
		595					600					605			
Leu	Met	Thr	Ser	His	Gln	Met	Ala	Arg	Val	Lys	Val	Ala	Ala	Cys	Glu
	610					615					620				
Val	His	Ser	Thr	Cys	Gly	Asp	Cys	Val	Gly	Ala	Ala	Asp	Ala	Tyr	Cys
625					630					635					640
Gly	Trp	Cys	Thr	Leu	Glu	Thr	Arg	Cys	Thr	Leu	Gln	Gln	Asp	Cys	Thr
				645					650					655	
Asn	Ser	Ser	Gln	Pro	His	Phe	Trp	Thr	Ser	Ala	Ser	Glu	Gly	Pro	Ser
			660					665					670		
Arg	Cys	Pro	Ala	Met	Thr	Val	Leu	Pro	Ser	Glu	Ile	Asp	Val	His	Arg
		675					680					685			
Asp	Tyr	Thr	Gly	Met	Ile	Leu	Gln	Ile	Ser	Gly	Ser	Leu	Pro	Ser	Leu
	690					695					700				
Ser	Gly	Met	Glu	Met	Ala	Cys	Asp	Tyr	Gly	Asn	Gly	Val	Arg	Thr	Val
705						710					715				720
Ala	Arg	Val	Pro	Gly	Pro	Ala	Tyr	Asp	His	Gln	Ile	Ala	Tyr	Cys	Asn
				725					730					735	
Leu	Leu	Pro	Arg	Ala	Gln	Phe	Pro	Ser	Phe	Pro	Ala	Gly	Gln	Asp	His
			740					745					750		
Val	Thr	Val	Glu	Met	Ser	Val	Arg	Val	Lys	Gly	His	Asn	Ile	Val	Ser
		755					760					765			
Ala	Asn	Phe	Thr	Ile	Tyr	Asp	Cys	Ser	Arg	Ile	Gly	Gln	Val	Tyr	Pro
	770					775					780				
His	Thr	Ala	Cys	Thr	Ser	Cys	Leu	Ser	Thr	Gln	Trp	Pro	Cys	Ser	Trp
785						790					795				800
Cys	Ile	Gln	Leu	His	Ser	Cys	Val	Ser	Asn	Gln	Ser	Gln	Cys	Gln	Asp
			805						810					815	

Ser Pro Asn Pro Thr Ser Pro Gln Asp Cys Pro Gln Ile Leu Pro Ser
820 825 830

Pro Leu Ala Pro Val Pro Thr Gly Gly Ser Gln Asp Ile Leu Val Pro
835 840 845

Leu Thr Lys Ala Thr Phe Phe His Gly Ser Ser Leu Glu Cys Ser Phe
850 855 860

Gly Leu Glu Glu Ser Phe Glu Ala Val Trp Ala Asn Asn Ser Leu Val
865 870 875 880

Arg Cys Asn Gln Val Val Leu His Thr Thr Gln Lys Ser Gln Val Phe
885 890 895

Pro Leu Ser Leu Lys Leu Lys Gly Pro Pro Asp Arg Phe Leu Asp Ser
900 905 910

Pro Asn Pro Met Thr Val Val Val Tyr Asn Cys Ala Met Gly Ser Pro
915 920 925

Asp Cys Ser Gln Cys Leu Gly Arg Glu Asp Leu Gly His Leu Cys Val
930 935 940

Trp Asn Asp Gly Cys Arg Leu Arg Gly Pro Leu Gln Pro Leu Pro Gly
945 950 955 960

Thr Cys Pro Ala Pro Glu Ile Arg Ala Ile Glu Pro Leu Ser Gly Pro
965 970 975

Leu Asp Gly Gly Thr Leu Leu Thr Ile Arg Gly Arg Asn Leu Gly Arg
980 985 990

Arg Leu Ser Asp Val Ala His Gly Val Trp Ile Gly Ser Val Ala Cys
995 1000 1005

Glu Pro Leu Ala Asp Arg Tyr Thr Val Ser Glu Glu Ile Val Cys
1010 1015 1020

Ala Thr Gly Pro Ala Ala Gly Ala Phe Ser Asp Val Val Thr Val
1025 1030 1035

Asn Val	Ser Lys Glu Gly Arg	Ser Arg Glu Gln Phe	Ser Tyr Val
1040	1045	1050	
Leu Pro	Thr Val His Ser Leu	Glu Pro Ser Met Gly	Pro Lys Ala
1055	1060	1065	
Gly Gly	Thr Arg Ile Thr Ile	His Gly Ser Asp Leu	Asn Val Gly
1070	1075	1080	
Ser Met	Leu Gln Val Leu Val	Asn Asp Thr Asp Pro	Cys Thr Asp
1085	1090	1095	
Leu Thr	Arg Thr Ala Thr Ser	Ile Thr Cys Thr Val	Pro Gly Gly
1100	1105	1110	
Thr Leu	Pro Ser Pro Val Pro	Val Cys Val Arg Phe	Glu Ser Arg
1115	1120	1125	
Gly Cys	Val His Gly Asn Leu	Thr Phe Trp Tyr Met	Gln Asn Pro
1130	1135	1140	
Val Ile	Thr Ala Ile Ser Pro	Gly Arg Ser Pro Val	Ser Gly Gly
1145	1150	1155	
Arg Thr	Ile Thr Val Ala Gly	Glu Arg Phe His Met	Val Gln Asn
1160	1165	1170	
Val Ser	Met Ala Val His His	Ile Gly Arg Glu Pro	Thr Phe Cys
1175	1180	1185	
Lys Val	Leu Asn Ser Thr Leu	Ile Thr Cys Pro Ser	Pro Gly Ala
1190	1195	1200	
Leu Ser	Asn Ala Ser Ala Pro	Val Asp Phe Phe Ile	Asn Gly Arg
1205	1210	1215	
Ala Tyr	Ala Asp Glu Ala Ala	Glu Glu Leu Leu Asp	Pro Ala Glu
1220	1225	1230	
Ala Gln	Arg Gly Ser Arg Phe	Arg Leu Asp Tyr Leu	Pro Asn Pro
1235	1240	1245	

Gln Phe	Ser Thr Ala Lys Arg	Glu Lys Trp Ile Lys	His His Pro
1250	1255	1260	
Gly Glu	Pro Leu Thr Leu Val	Ile His Lys Glu Gln	Asp Ser Leu
1265	1270	1275	
Gly Leu	Glu Ser His Glu Tyr	His Ile Lys Ile Gly	Gln Val Ser
1280	1285	1290	
Cys Asp	Ile Gln Ile Ile Ser	Asp Arg Val Ile His	Cys Ser Val
1295	1300	1305	
Asn Glu	Ser Leu Gly Thr Ala	Glu Gly Gln Leu Pro	Ile Thr Ile
1310	1315	1320	
Gln Val	Gly Asn Phe Asn Gln	Thr Ile Ala Thr Leu	Gln Leu Gly
1325	1330	1335	
Gly Ser	Glu Thr Ala Ile Val	Val Ser Ile Val Ile	Cys Ser Val
1340	1345	1350	
Leu Leu	Leu Leu Ser Val Val	Ala Leu Phe Val Phe	Cys Thr Lys
1355	1360	1365	
Ser Arg	Arg Ala Glu Arg Tyr	Trp Gln Lys Thr Leu	Leu Gln Met
1370	1375	1380	
Glu Glu	Met Glu Ser Gln Ile	Arg Glu Glu Ile Arg	Lys Gly Phe
1385	1390	1395	
Ala Glu	Leu Gln Thr Asp Met	Thr Asp Leu Thr Lys	Glu Leu Asn
1400	1405	1410	
Arg Ser	Gln Gly Ile Pro Phe	Leu Glu Tyr Lys His	Phe Val Thr
1415	1420	1425	
Arg Thr	Phe Phe Pro Lys Cys	Ser Ser Leu Tyr Glu	Glu Arg Tyr
1430	1435	1440	
Val Leu	Pro Ser Lys Thr Leu	Asn Ser Gln Gly Gly	Ser Pro Pro
1445	1450	1455	
Gln Glu	Thr His Pro Leu Leu	Gly Glu Trp Asn Ile	Pro Glu His

1460		1465		1470
Cys Arg Pro Ser Met Glu Glu Gly Ile Ser Leu Phe Ser Ser Leu				
1475		1480		1485
Leu Asn Asn Lys His Phe Leu Ile Val Phe Val His Ala Leu Glu				
1490		1495		1500
Gln Gln Lys Asp Phe Ala Val Arg Asp Arg Cys Ser Leu Ala Ser				
1505		1510		1515
Leu Leu Thr Ile Ala Leu His Gly Lys Leu Glu Tyr Tyr Thr Ser				
1520		1525		1530
Ile Met Lys Glu Leu Leu Val Asp Leu Ile Asp Ala Ser Ala Ala				
1535		1540		1545
Lys Asn Pro Lys Leu Met Leu Arg Arg Thr Glu Ser Val Val Glu				
1550		1555		1560
Lys Met Leu Thr Asn Trp Met Ser Ile Cys Met Tyr Gly Cys Leu				
1565		1570		1575
Arg Glu Thr Val Gly Glu Pro Phe Phe Leu Leu Leu Cys Ala Ile				
1580		1585		1590
Lys Gln Gln Ile Asn Lys Gly Ser Ile Asp Ala Ile Thr Gly Lys				
1595		1600		1605
Ala Arg Tyr Thr Leu Asn Glu Glu Trp Leu Leu Arg Glu Asn Ile				
1610		1615		1620
Glu Ala Lys Pro Arg Asn Leu Asn Val Ser Phe Gln Gly Cys Gly				
1625		1630		1635
Met Asp Ser Leu Ser Val Arg Ala Met Asp Thr Asp Thr Leu Thr				
1640		1645		1650
Gln Val Lys Glu Lys Ile Leu Glu Ala Phe Cys Lys Asn Val Pro				
1655		1660		1665
Tyr Ser Gln Trp Pro Arg Ala Glu Asp Val Asp Leu Glu Trp Phe				
1670		1675		1680

Ala	Ser	Ser	Thr	Gln	Ser	Tyr	Val	Leu	Arg	Asp	Leu	Asp	Asp	Thr
1685						1690					1695			
Ser	Val	Val	Glu	Asp	Gly	Arg	Lys	Lys	Leu	Asn	Thr	Leu	Ala	His
1700						1705					1710			
Tyr	Lys	Ile	Pro	Glu	Gly	Ala	Ser	Leu	Ala	Met	Ser	Leu	Thr	Asp
1715						1720					1725			
Lys	Lys	Asp	Ser	Thr	Leu	Gly	Arg	Val	Lys	Asp	Leu	Asp	Thr	Glu
1730						1735					1740			
Lys	Tyr	Phe	His	Leu	Val	Leu	Pro	Thr	Asp	Glu	Leu	Val	Glu	Pro
1745						1750					1755			
Lys	Lys	Ser	His	Arg	Gln	Ser	His	Arg	Lys	Lys	Val	Leu	Pro	Glu
1760						1765					1770			
Ile	Tyr	Leu	Thr	Arg	Leu	Leu	Ser	Thr	Lys	Gly	Thr	Leu	Gln	Lys
1775						1780					1785			
Phe	Leu	Asp	Asp	Leu	Phe	Lys	Ala	Ile	Leu	Ser	Ile	Arg	Glu	Asp
1790						1795					1800			
Lys	Pro	Pro	Leu	Ala	Val	Lys	Tyr	Phe	Phe	Asp	Phe	Leu	Glu	Glu
1805						1810					1815			
Gln	Ala	Glu	Lys	Arg	Gly	Ile	Ser	Asp	Pro	Asp	Thr	Leu	His	Ile
1820						1825					1830			
Trp	Lys	Thr	Asn	Ser	Leu	Pro	Leu	Arg	Phe	Trp	Val	Asn	Ile	Leu
1835						1840					1845			
Lys	Asn	Pro	Gln	Phe	Val	Phe	Asp	Ile	Glu	Lys	Thr	Asp	His	Ile
1850						1855					1860			
Asp	Ala	Cys	Leu	Ser	Val	Ile	Ala	Gln	Ala	Phe	Ile	Asp	Ala	Cys
1865						1870					1875			
Ser	Ile	Ser	Asp	Leu	Gln	Leu	Gly	Lys	Asp	Ser	Pro	Thr	Asn	Lys
1880						1885					1890			

Leu Leu Tyr Ala Lys Glu Ile Pro Glu Tyr Arg Lys Thr Val Gln
 1895 1900 1905

Arg Tyr Tyr Lys Gln Ile Gln Asp Met Thr Pro Leu Ser Glu Gln
 1910 1915 1920

Glu Met Asn Ala His Leu Ala Glu Glu Ser Arg Lys Tyr Gln Asn
 1925 1930 1935

Glu Phe Asn Thr Asn Val Ala Met Ala Glu Ile Tyr Lys Tyr Ala
 1940 1945 1950

Lys Arg Tyr Arg Pro Gln Ile Met Ala Ala Leu Glu Ala Asn Pro
 1955 1960 1965

Thr Ala Arg Arg Thr Gln Leu Gln His Lys Phe Glu Gln Val Val
 1970 1975 1980

Ala Leu Met Glu Asn Asn Ile Tyr Glu Cys Tyr Ser Glu Ala
 1985 1990 1995

<210> 16
 <211> 6931
 <212> DNA
 <213> mouse

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 cgggcccgcg ccccgccctct cgccgcctcc gagctcccgg ctcccggccg cgccgcgccc 180
 catgcactcg ccgcgcccgc cagcccgcgc tcgcctggat ggctcgtcgc gccgcgggcg 240
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 ggggccctgg tctgctgccg ctgcctctgc tgctgctgct cggggcgggca cgggcccggc 360
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 aaatcctgca gttggacccg ggccagggtc tggtggtcgc gtgcggctcc atctaccagg 660

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agatcaagca	gggcgccaaag	gagcagcaca	agctgggctt	cgtgcgtgcc	ttcttgacc	1080
cggcggtgcc	accgcacagc	gcgcagccct	acgcgtacct	ggcgctcaac	agcgaggcgc	1140
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gcgcgggtgg	cgacgccaaag	aagctcaccg	agtcctacat	ccaactgggc	ttgcagtgcg	1260
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gggtcaaagg	acacaacatt	gtctcagcca	atttcacat	ctacgactgc	agccgaattg	2340
gacaagtcta	ccccatata	gcctgtacca	gctgcctgtc	cacacagtgg	ccttgctcct	2400

ggtgcatcca gctgcattca tgtgtctcca accagtctca gtgccaggac tcgccaacc 2460
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agagtcatcc actgctcagt caatgagtcg ctgggcacgg ctgaaggaca gctgcccac 3960
acaatccagg tggggaactt caaccagacc atcgccacac tgcaactggg g 4011

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<210> 20
<211> 20
<212> DNA
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
      primer

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<400> 20
cccggtgccc gaggtaggcg 20

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<210> 21
<211> 51
<212> DNA
<213> Artificial Sequence

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<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide primer

<400> 21
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<210> 22
 <211> 23
 <212> PRT
 <213> mouse

<400> 22

Glu Thr Ala Ile Val Val Ser Ile Val Ile Cys Ser Val Leu Leu Leu
 1 5 10 15

Leu Ser Val Val Ala Leu Phe
 20

<210> 23
 <211> 15
 <212> PRT
 <213> mouse

<400> 23

Phe Leu Glu Glu Gln Ala Glu Lys Arg Gly Ile Ser Asp Pro Asp
 1 5 10 15

<210> 24
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide derived from mouse

<400> 24

Cys Phe Leu Glu Glu Gln Ala Glu Lys Arg Gly Ile Ser Asp Pro Asp
 1 5 10 15

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